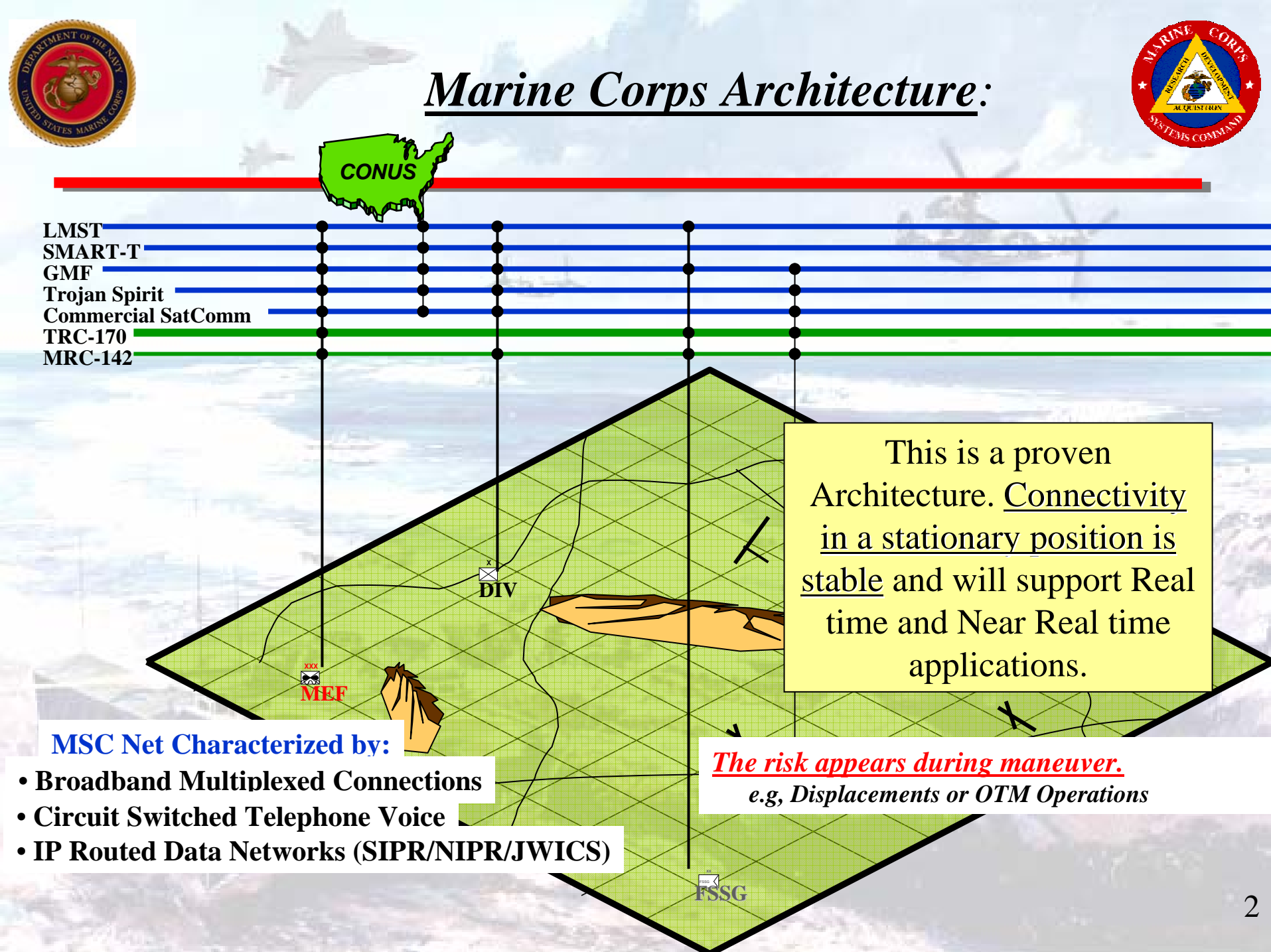


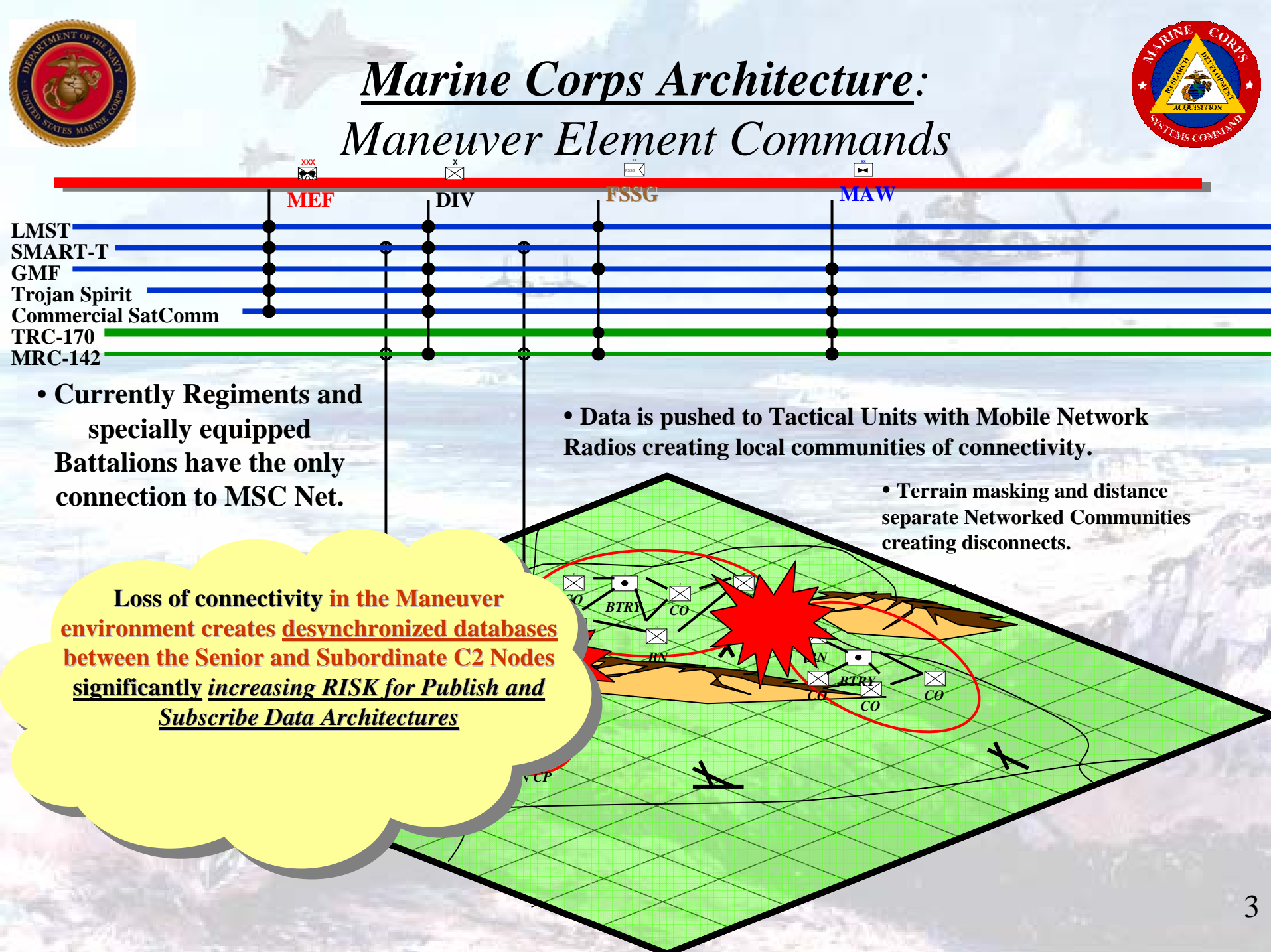
Marine Corps Communications Strategy to support MAGTF C2



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Marine Corps Architecture: Maneuver Element Commands

MEF

DIV

FSSG

MAW

LMST
SMART-T
GMF
Trojan Spirit
Commercial SatComm
TRC-170
MRC-142

- Currently Regiments and specially equipped Battalions have the only connection to MSC Net.

- Data is pushed to Tactical Units with Mobile Network Radios creating local communities of connectivity.

- Terrain masking and distance separate Networked Communities creating disconnects.

Loss of connectivity in the Maneuver environment creates desynchronized databases between the Senior and Subordinate C2 Nodes significantly increasing RISK for Publish and Subscribe Data Architectures



The new model: *the C2 Node*

Marine Commanders are demanding positive Command and Control and Situational Awareness from any location - in any platform! Command is exercised from where ever the commander chooses to be.



A Commander's Vehicle



A rapidly displaceable
Tactical Operations Center

A stationary fixed
Unit Operations Center



The C2 Nodes may look significantly different but they require similar technical attributes.

– Radios, Network Services, Applications, and End User Devices





CONDOR Gateway

- CONDOR Gateway demonstrations have used a hardtop HMMWV with rack mounted commercial components (shown to right)
- US Army CTSF in cooperation with USMC MCSC has successfully bridged Army FBCB2 Secure mobile EPLRS Nets to Marine C2PC Secure mobile nets.
- The prototype components cost around \$75K.
- Current CONDOR Satellite on-the-move service has been demonstrated with **INMARSAT**, **CDMA Ku Band (JFCOM)**, **TDMA Ku Band**, **Global Star** and **Iridium**.



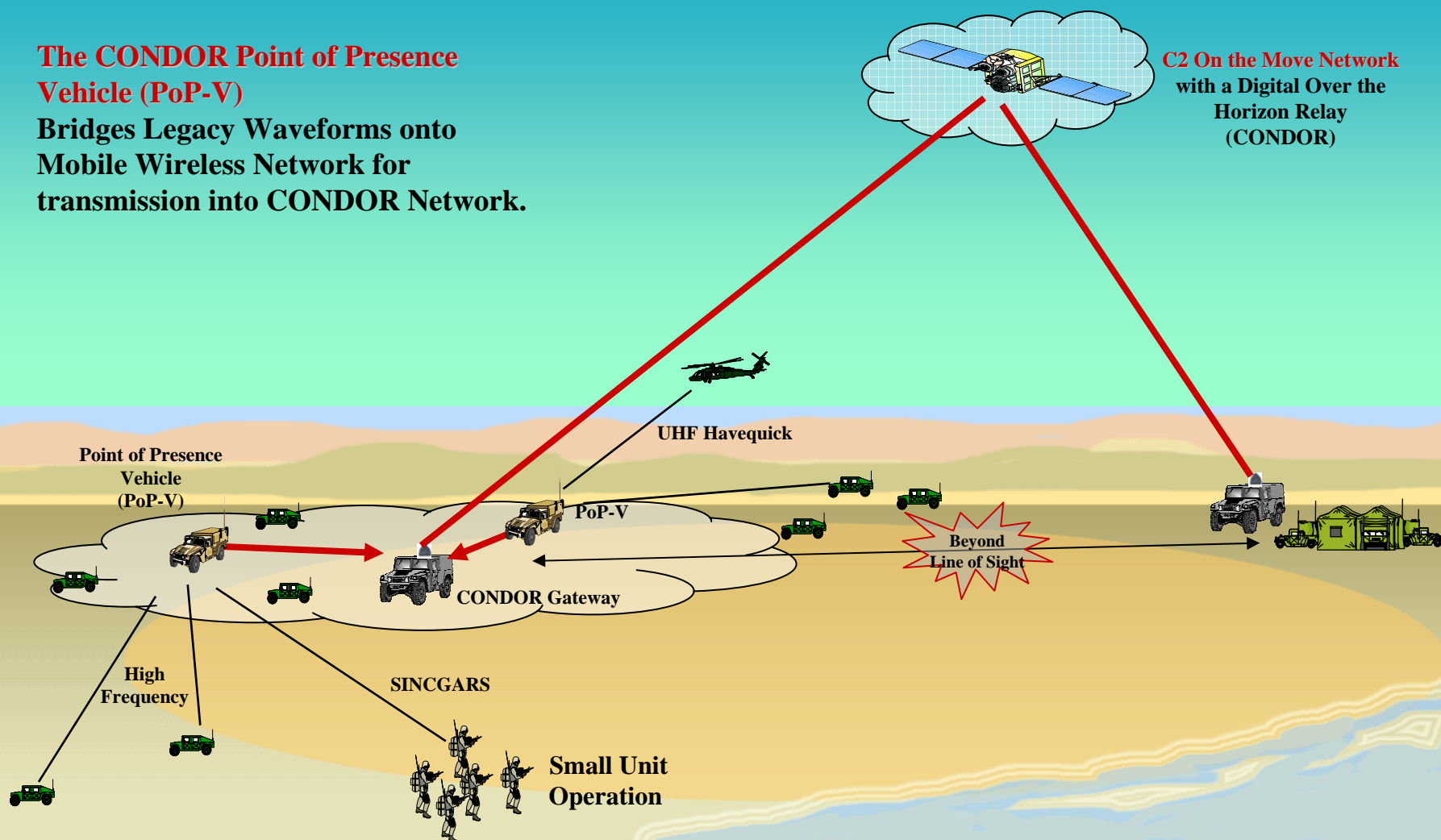


CONDOR Point of Presence Vehicles

USMC MRC-Vehicle replacements

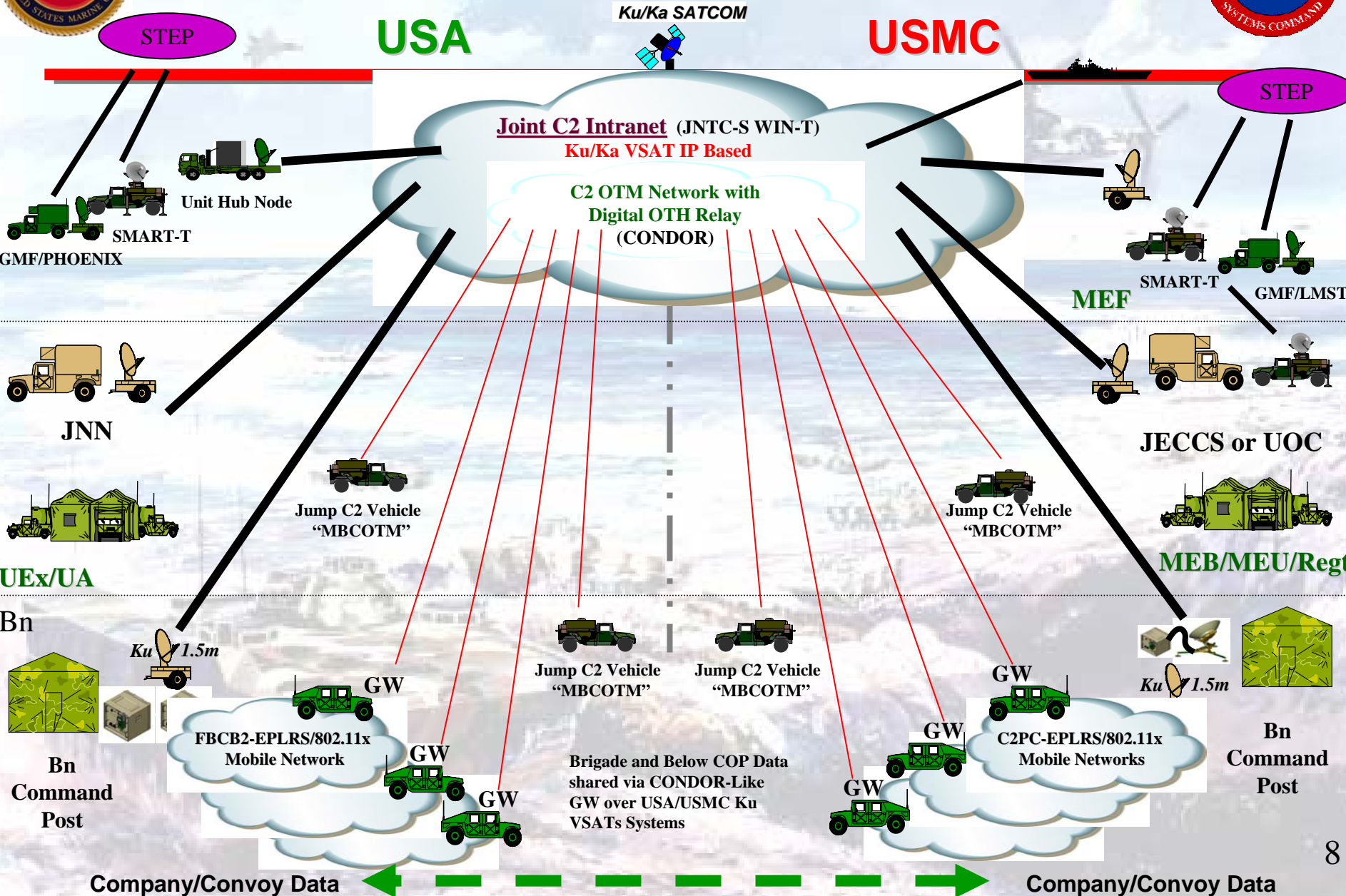
The CONDOR Point of Presence Vehicle (PoP-V)

Bridges Legacy Waveforms onto Mobile Wireless Network for transmission into CONDOR Network.





Common Ground Communications Architecture





Tying it Together

- *The vision of Net-Centricity can be connected through the equipment being developed.*
 - *Technically we can get there, ...*

OUR CHALLENGE IS NETWORK MANAGEMENT.

- *Developing the methods and the Tactics, Techniques and Procedures.*
 - *IP Standardization*
 - *Optimizing IP over RF (188-220, 183/84, etc.)*
 - *Routing Methods*
 - *Collision Domain Sizes on Stub nets*
 - *Automated Network Registration*
 - *Session negotiation following communications loss*
 - *Coalition networks and security*
- *Training our Operators and Maintainers on these difficult procedures*
- *Keeping these exceptional Soldiers, Marines, Airmen and Sailors*



Tying it Together

- *The vision of Net-Centricity can be connected through the equipment being developed.*
 - *Technically we can get there, ...*

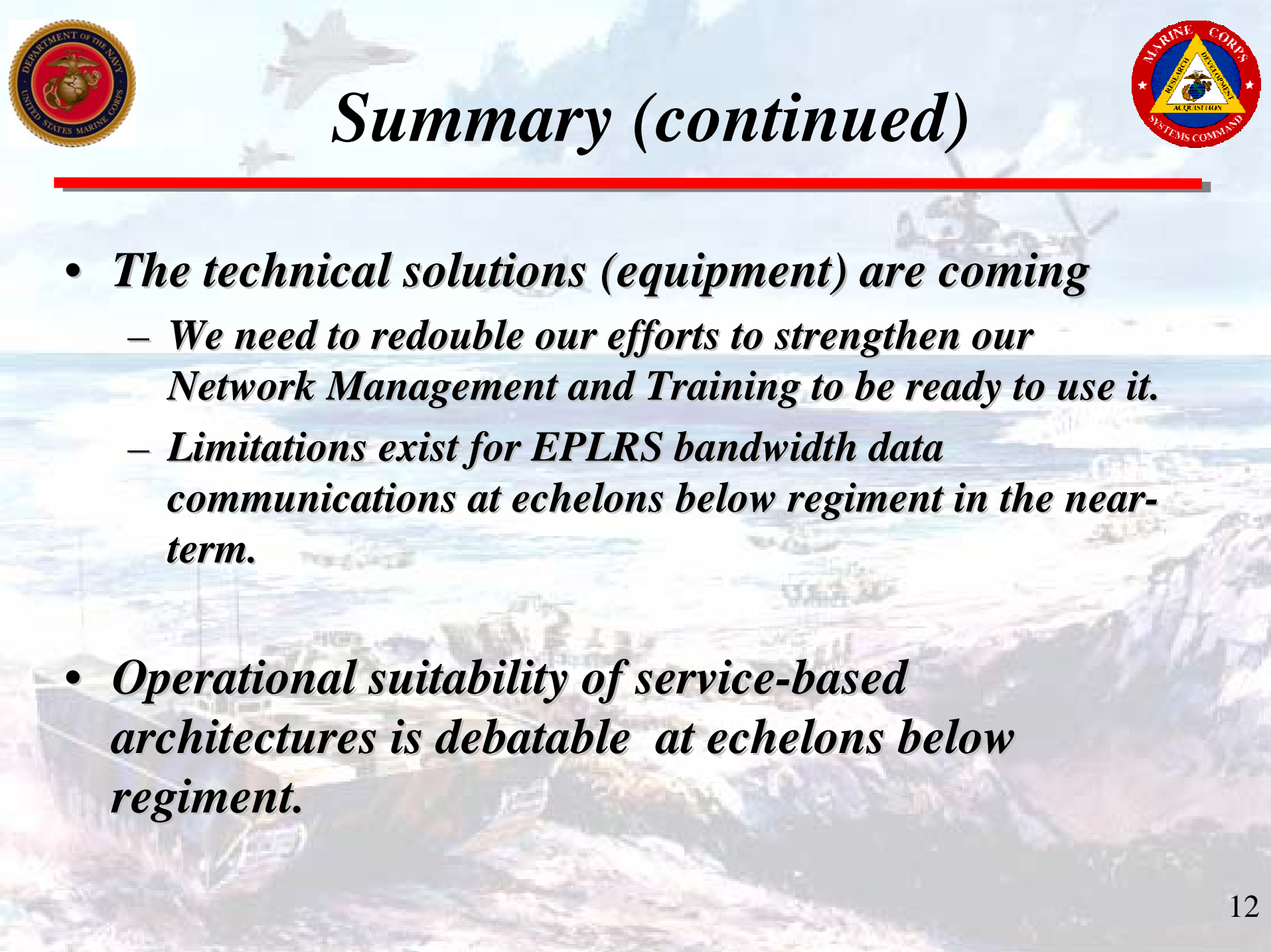
But should we??

- *Does Net-Centricity act as a combat multiplier at the tactical level of war (echelons below regiment)?*
 - *An unproven hypothesis.*
 - *Is any additional combat value gained over current methods?*
 - *Is the gain in combat value equal to the cost of implementing the technology?*
 - » *Acquisition costs?*
 - » *Size, weight, cube costs?*
 - » *Network operations personnel costs?*



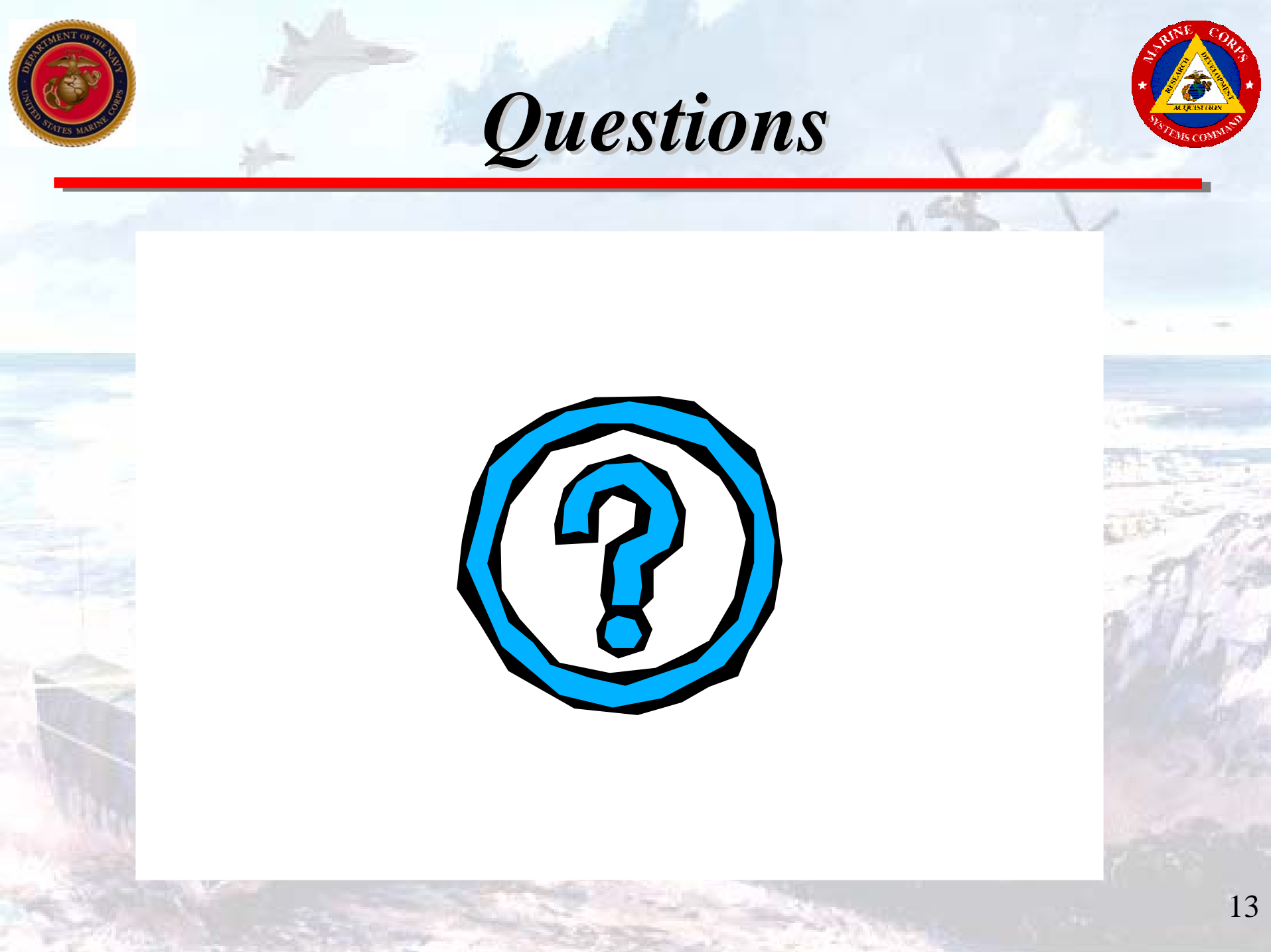
Summary

- *Our C2 Nodes can be built onto any platform because of the nature of available equipment.*
- *The CONDOR Architectural Approach, the Ku VSAT Solution and the GIG BE will provide connectivity from Major Subordinate Command to Company level.*
- *Modular approach to acquisition provides a cost effective method for us to integrate new C2 capabilities in Marine platforms.*



Summary (continued)

- *The technical solutions (equipment) are coming*
 - *We need to redouble our efforts to strengthen our Network Management and Training to be ready to use it.*
 - *Limitations exist for EPLRS bandwidth data communications at echelons below regiment in the near-term.*
- *Operational suitability of service-based architectures is debatable at echelons below regiment.*



Questions

